

ARTICLES

Nature's Neighborhood

Urban Environmental History and Neighborhood Planning

Wendy A. Kellogg

The physical form of an urban settlement is a product of the reciprocal relationship between the humans and the ecological systems in the area which act together to create an urban landscape that changes through time. While many of the interactions between the natural world and the built environment occur at the regional level, the quality of life experienced by residents is in large part a function of environmental conditions in the neighborhood. This article explores the benefits to neighborhood planning from incorporating urban environmental history. It reviews the conceptual territory of urban environmental history and presents a framework for its application to neighborhood planning. An environmental history completed for a neighborhood is highlighted to illustrate the technique.

Kellogg is an associate professor of urban planning and environmental studies at the Levin College of Urban Affairs, Cleveland State University. She took her Ph.D. in city and regional planning at Cornell University. Her research interests lie in the roles of citizens, nongovernmental organizations, and local government in environmental planning. Her recent neighborhood-based projects include development of an environmental risk training program for residents in Cleveland's St. Clair-Superior neighborhood and technical assistance to the Cleveland EcoVillage project.

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The particular physical form that an urban settlement exhibits evolves from the interaction between human culture and the area's specific physical characteristics and ecological resources. That interaction creates the "landscape" that is experienced by humans on a day-to-day basis (Hough, 1990, 1995; Simmons, 1996; Steiner, 1991). This understanding of "landscape" owes much to landscape ecologists and early planners such as Olmsted (1870), Geddes (1915), MacKaye (1928), and McHarg (1969), who described an approach to regional settlement planning based on principles of ecological and cultural systems. Their landscape planning incorporated a strong use of history—both geologic and human. William Cronon's *Nature's Metropolis* (1991) is a well-known example of an effort to combine the methods of urban history with the concepts of regional ecology. Cronon documented the reciprocal relationship of regional natural resource exploitation, landscape changes, and urban economic development in 19th-century Chicago. Those regional ecosystem changes were experienced in the city, often at the neighborhood scale.

Today, neighborhood-based planning efforts increasingly include attention to both ecological resources and environmental health (Heiman, 1997; Kellogg, 1999). As with other aspects of urban change, many neighborhood environmental issues can only be fully understood when placed in their ecological and historical contexts. This article explores the use of urban environmental history to improve environmental planning practice at the neighborhood scale. It first describes the conceptual "territory" of urban environmental history and suggests a set of benefits that might accrue from its use in neighborhood planning. It then presents a framework developed to apply these concepts at the neighborhood scale and describes an application of the framework in a Cleveland, Ohio, neighborhood. Finally, I summarize and reflect on the application and its implications for broader use.

Urban Environmental History

The principal goal of environmental history as a field is to deepen our understanding of "how humans have been affected by their natural environment through time and, conversely, how they have affected that environment and with what results" (Worster, 1988, pp. 290–291). The field draws on the disciplines of history, ecology, geography, climatology, and epidemiology. As a self-described field, urban environmental history coalesced in the early 1990s, in part fueled by a debate among environmental historians brought to the fore by Donald Worster (1990) in an essay in the *Journal of American History*. Worster pointed the compass of environmental historians toward human interaction with nature to describe how capitalist agriculture had transformed nature over time, explicitly excluding consideration of the urban environment. Summarizing Worster, Rosen and Tarr (1994) wrote that environmental historians "should study farms, not cities" (p. 299).

Over the next several years, environmental and urban historians alike reacted against Worster's contention, noting that it was illogical for environmental historians to study "human intrusion into the natural world in the form of farming and not in the building of a town or city," thereby creating an "artificial physical environment devoid of human communities—including cities" (Melosi, 1993, p. 4). The debate over the centrality of the city in the field of environmental history still has its participants (Keyes, 2000), but a growing body of study in environmental history explores the urban environment.

What aspects of the relationships among urban settlements, their human inhabitants, and the natural world are of concern to the urban environmental historian? Rosen and Tarr (1994) have defined four dimensions of study to demarcate the intellectual territory of urban environmental history:

- *The impact of cities on the natural environment.*

Human settlements place a demand on their sites and on the surrounding countryside, altering the earth's natural status in profound ways. Inhabitants level hills and open the earth to construct sewer and water systems; they put streams and brooks into underground culverts, fill in wetlands, dam rivers, and fill coastlines. They kill flora and fauna native to locations and introduce new ones through agriculture and urban landscaping. They build houses, factories, offices, and churches; pave over wooded areas, grassland, and hillsides; and generate enormous amounts of waste materials (Rosen & Tarr, 1994, pp. 301–303).

- *The impact of the natural environment on cities.*

Human settlements have historically been founded in places where nature offered resources for sustenance: in fertile valleys where food could be grown, on coastlines with harbors, and next to rivers for transport and energy needs and for drinking water. In this way, "nature gave life to cities" (Rosen & Tarr, 1994, p. 304). The impact of the natural environment was also felt as city dwellers contended with forces of nature—including floods, famines, hurricanes, tornadoes, fires, landslides, droughts, and epidemics—that threatened their lives and the built environment they had created.

- *The response to urban environmental change and environmental problems.*

Humans experience these changes over time as they alter the natural world and contend with the built form. Human "perceptions, ideologies, ethics, laws, and myths . . . become part of an individual or group's dialogue with nature" (Worster 1990, p. 1091). The human response to these changes, based on individual and group perceptions, shapes society's role in the earth's environmental evolution (Worster quoted in Rosen & Tarr, 1994, p. 306).

- *The urban perspective and the built environment in environmental history.*

As Rosen and Tarr (1994) suggest, the built form of the city is "intimately related to the history of the nonhuman natural world . . . [as] . . . natural and built environments have evolved in dialectical interdependence and tension" (p. 307). During the 19th century, the changes inside and outside the city created problems of pollution, waste, and flooding, so urban settlements developed their own "eco" systems to replace the now degraded natural ones (Rosen & Tarr 1994, pp. 301–303). The natural world influenced the technologies, materials, and locations chosen to construct the built form, often giving a city its particular architectural style or pattern of development (Hough, 1990).

Neighborhood Planning and Urban Environmental History

Why develop a record of a neighborhood's environmental history? A graduate assistant and I had been working with a community development organization in Cleveland on an environmental land use concern that required historical documentation. During that project, the organization's director asked whether we thought a more comprehensive review of the historic environmental characteristics of the neighborhood was possible. A

series of discussions identified the key neighborhood characteristics about which the organization was concerned. The framework that follows evolved out of these discussions with the client, which eventually included a second community-based organization.¹

First and foremost, the client was interested in moving beyond piecemeal historical or ecological information about the neighborhood. Developing the neighborhood's environmental history would allow for a more holistic understanding of the neighborhood's ecological place in the region and in the city as the basis for better planning practice. The client hoped that attention to how the city and neighborhood had developed also would reveal historic sources of land use contamination problems and how past residential patterns and pollution sources had shaped present-day environmental health hazards and the generation of natural resource amenities and disamenities. We hoped that the environmental history would shed light on environmental justice issues similar to those faced by many low-income and minority urban communities (Hurley, 1997; Melosi, 1995).

Second, neighborhood-based planning for revitalization requires a sustained, high-level effort and often depends on the degree to which residents and their advocates can create a "sense of place" in the neighborhood. This neighborhood had changed over the last several decades, and the client was looking for a mechanism to help build interest and action on environmental issues among neighborhood residents. The environmental history might help generate a sense of place by fostering a connection to the neighborhood's physical territory and natural features (Beatley & Manning, 1997; Hough, 1990, 1995; Lynch & Hack, 1984). This reasoning in effect parallels Dolores Hayden's (1994) work on social history by advocating that neighborhood residents can find untapped civic meaning by understanding historical relationships with nonhuman species and ecological processes.

Finally, the client hoped that an understanding of the past might encourage residents to recognize the possibility of change. Many longtime residents had become discouraged over the commercial disinvestment and deterioration of housing stock in the neighborhood, and residents were doubtful that their concerns about air pollution, vacant lots, and the lack of green play space for their children would be addressed. A neighborhood environmental history might reveal alternatives to existing environmental conditions and could frame efforts for neighborhood revitalization, offer ideas for improving quality-of-life conditions, or spur change to more sustainable development patterns (Beatley & Manning, 1997).

Framework, Attributes, and Process

While Rosen and Tarr's (1994) four dimensions provide intellectual guidance to identify the types of information that could be included in an urban environmental history, the authors do not explain how these dimensions would be articulated on a daily basis. Over the course of our work, we framed the elements of settlement life within these dimensions as a set of reciprocal physical/cultural relationships. These relationships change through time and are manifest in real places—in our case, at the scale of the neighborhood (see Figure 1). Both the initial natural characteristics of the city and the changes wrought by settlement growth shaped the residents' responses to their surroundings. Those responses, in turn, as they were motivated by sociocultural and economic interests and organized through institutions, shaped human actions to construct and reconstruct the built form. It is this constant building activity that manifests as the impact of the city on the natural environment.

We drew from two sources to help us apply our understanding of these relationships in our work. The urban environmental history literature itself was a guide for the kind of historical storytelling that is possible. Appendix Table A-1 shows a sample of environmental history literature arranged according to Rosen and Tarr's (1994) four dimensions of study. We then overlaid a version of Ian McHarg's "layer cake" model (Steiner, 1991, p. 13) to provide the comprehensive information scope used for environmental planning. McHarg suggests an inventory beginning with a foundation layer that documents the sociocultural, biological, and physical characteristics of a place. At each succeeding upper layer, each category is subdivided into more focused topics. (For example, physical resources are divided into climate, hydrology, soils, physiography, and geology. Geology is divided into surface and bedrock, soils into characteristics of erosion, drainage, and type, etc.). Table 1 summarizes the information framework, including the attributes within each study dimension of environmental history and the relevant questions to be answered at the neighborhood scale.

Using this framework as a guide, we sought first to document the impact of the natural environment on neighborhood development, beginning with the area's natural history and documenting attributes as delineated by the layer-cake model. We also documented the impact of neighborhood development on the natural environment as it was changed by infrastructure development, industrial production, commercial and residential expansion, and development of public parks and other lands. These types of information together were

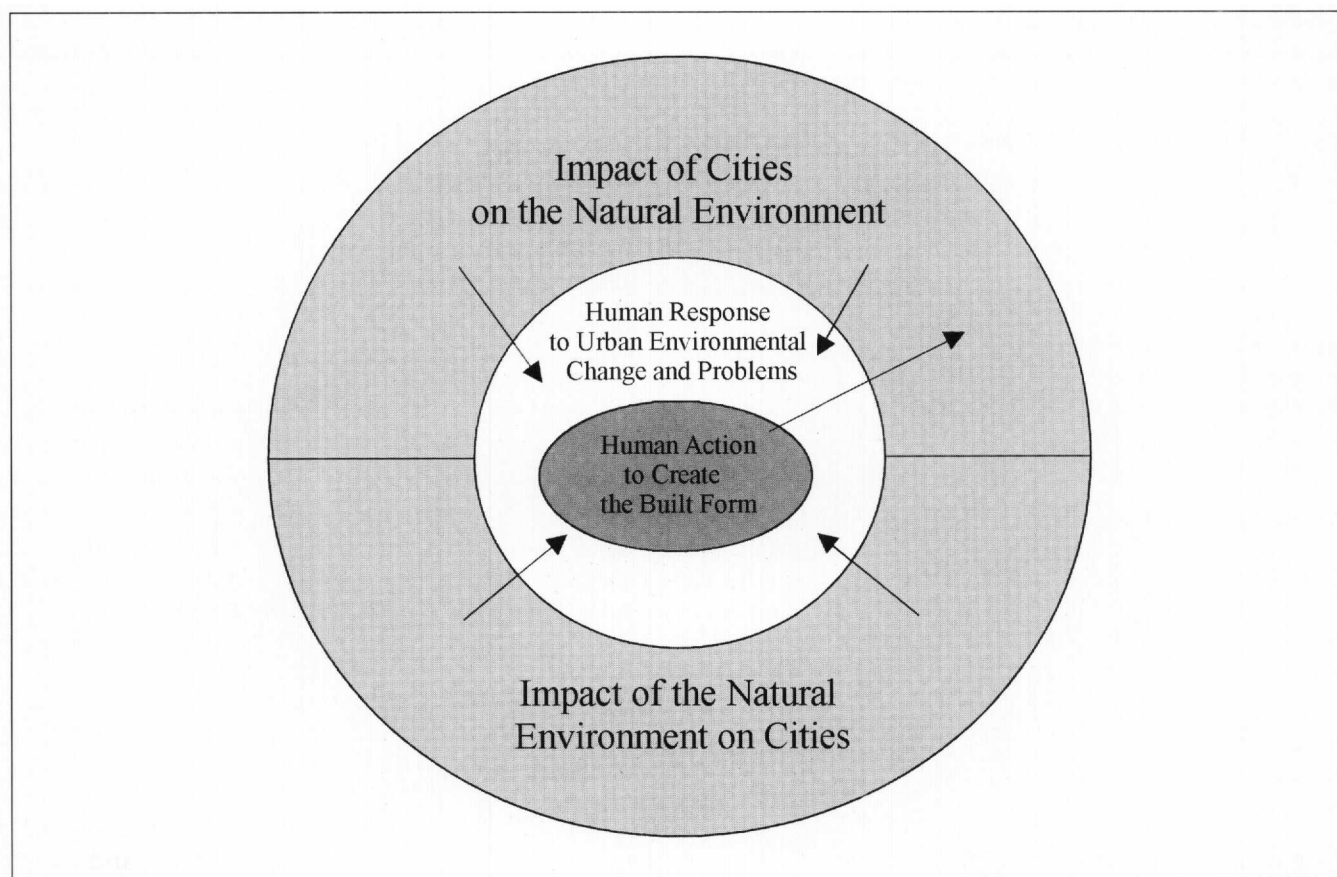


FIGURE 1. Nested and interacting relationships between the natural environment, human perception, and the built form.

used to derive an understanding of the interdependence among ecology, economy, and the changing landscape articulated during the build-out of the neighborhood. Appendix Table A-2 presents a set of attributes that we discovered would likely be needed for a comprehensive neighborhood environmental history, the specific data that would be collected, the sources for data, and their likely repositories.

Publishing constraints prohibit a full presentation of all the information gathered during the application. Rather, we describe the neighborhood site, the client's needs, and the application of the framework to collect the information. We highlight two elements of the environmental history for the neighborhood. We then describe how the client has used the historic information for neighborhood planning efforts.

St. Clair-Superior Neighborhood Environmental History

Site Description

The St. Clair-Superior neighborhood is located in the northeast section of Cleveland approximately 2 miles from its Central Business District (see Figure 2). The neighborhood's northern border is Lake Erie. The economic base is an aging industrial area by the lakeshore. Small commercial enterprises line several major east-west arterial streets. At the western end of the neighborhood, small industrial facilities that discharge toxic and noxious smoke and vapors are intermingled with residential streets, exemplifying many urban neighborhoods settled in the last decades of the 19th and early 20th centuries.² The eastern end of the neighborhood is demarcated by an urban stream and linear park.

The neighborhood's 11,410 residents are culturally and ethnically diverse: 18% White, 78% African Ameri-

TABLE 1. Information framework for urban environmental history at the neighborhood scale.

Element*	Questions relevant for the neighborhood scale
Impact of cities on the natural environment	
Natural resource exploitation	What changes in vegetation, soils, physiography, hydrology, and microclimate occurred in the neighborhood as it developed?
Technology development/use	What animal species were killed or introduced through settlement?
Microclimate change	What diseases/pathogens were introduced?
Land use/transformation	What pollution was generated in the neighborhood?
Impact of the natural environment on cities	
Geology: bedrock and surface	Of what ecological system is the neighborhood a part?
Physiography: elevation and slope	Did any major land forms attract people to settle the area (coastline, building materials, etc.)?
Hydrology: surface water, watersheds, ground water	What land forms presented hazards (e.g. landslides)?
Soils	How did hillsides, valleys, and gullies shape the location and evolution of the neighborhood?
Climate: macro and micro	How did slope and elevation shape agricultural use of the land?
	Was a drinking water source present?
	What type of surface water existed for transportation, for cleaning, for cooling, as a source of fish?
	Did the water table preclude development?
	Did fertile soils attract settlers? What kinds of crops were suitable?
	How difficult was cultivation?
	What animal habitats existed for sources of game?
	How did solar and wind characteristics shape the neighborhood?
	What were incidence and levels of rainfall, floods, famines, hurricanes, tornadoes, fires, and drought?
Human response to urban environmental change and environmental problems	
Cultural values	How did the culture and socioeconomic class of the residents shape their use and perception of the neighborhood's natural resources?
Property regulation/law	How did use of natural resources change as the neighborhood's economy, government institutions, politics, technology, and culture evolved?
Political/social institutions	How did residents make sense of these changing conditions?
Literature/art/music	To what extent do residents perceive their ecological connection to systems outside the neighborhood?
	In what ways are values, emotions, etc. expressed?
	How were environmental hazards and amenities distributed spatially?
	Is this considered equitable among residents?
Urban perspective and the built environment	
Infrastructure (water, sewer, roads)	What infrastructure systems were developed in the neighborhood and when?
Building materials	How did changing technology affect the use of the natural resources?
Transportation technology	What indigenous building materials were used from the neighborhood for housing and other building?
Environmental legacy	What human-engineered systems replaced ecological systems?
	What adverse public health or ecological hazards were created through development of the neighborhood?
	What is the distribution of environmental hazards created out of ongoing socio-economic conflict and change at the neighborhood and city level?

*Derived from Rosen & Tarr's (1994) dimensions of urban environmental history and Ian McHarg's inventory layers (Steiner, 1991).

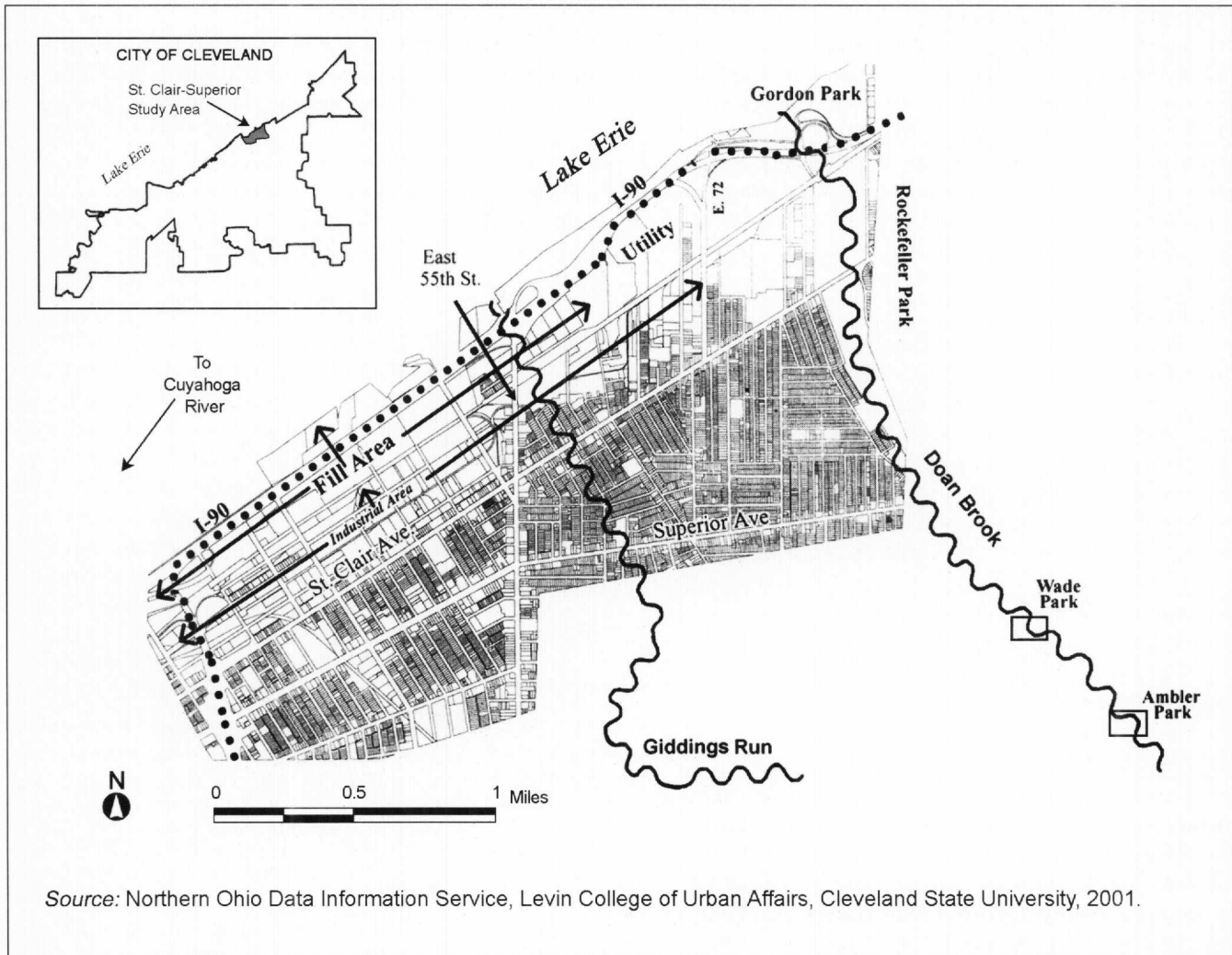


FIGURE 2. Neighborhood and environmental history features of Cleveland's St. Clair-Superior study area, 2001.

can, and 6% Hispanic (Geolytics, 2000).³ St. Clair-Superior is a low-income neighborhood, with an estimated 1999 median household income of \$19,000. Sixty-six percent of the residents live in households with less than \$25,000 annual income. The neighborhood shares characteristics with many older urban neighborhoods, including problems of disinvestment, crime, abandoned housing, vacant parcels, high unemployment, and environmental degradation. The neighborhood, however, also has a rich ethnic mix of older Slavic residents and younger African American and Hispanic residents who have begun to work together to restore the quality of their living environment.

Client

We worked with two development organizations, both recognized and partially funded by the City of Cleveland. The St. Clair-Superior Neighborhood Development Corporation (SCSNDC) organizes neighborhood block clubs, rehabilitates multifamily and single-family housing, administers a City-sponsored pediatric lead education program, and promotes small business development in the area. The Lakeside Area Development Corporation (LADCO) focuses on industrial retention and development in the aging industrial area along the lakeshore.

The SCSNDC and LADCO hoped the environmental history would give them a better understanding of how environmental conditions had changed as the

neighborhood developed in the late 19th and early 20th centuries, so the organizations could identify and address the environmental legacy of these changes. They were particularly interested in land contamination in the neighborhood's commercial strips, the quality of park areas and greenspaces, the loss of public access to the Lake Erie shoreline, and the lakeside area's overall relationship to the neighborhood's economic and environmental health. Our work addressed all these concerns.

Application

We developed a data attribute package (see Appendix Table A-2) to meet the client's information needs, focusing on the evolution of the built form that arose from economic activities of the neighborhood's residents in response to the natural ravines and lakeshore. Our attribute list included natural features (e.g., the lake geology and physiography and predominant hydrologic patterns), evolution of public infrastructure (e.g., sewer, water, railroads, and street/highway systems), historic land use patterns (e.g., commercial areas along the two main arterial streets and the evolution of industry along the lakefront), and the institutional responses to neighborhood change.⁴

Highlights of Results

This section presents highlights of the history of surface water loss and preservation in the neighborhood and the Lake Erie shoreline area. These two aspects of surface water illustrate well Rosen and Tarr's (1994) dimensions of study: the impact of the natural environment on the city and the impact of the city on the natural environment—articulated through the changes in two riparian corridors and the development of the lakeshore industrial area during buildout of the neighborhood—and the human response to these changes at the institutional level.

The Two Streams. The City of Cleveland is transected by numerous streams which run into either the Cuyahoga River or directly into Lake Erie. Historic records indicate that the St. Clair-Superior area contained two streams that flowed northwest into Lake Erie (see Figure 2). Doan Brook forms the eastern boundary of the neighborhood. It rises in Shaker Heights, travels northwest toward Lake Erie, descending over an ancient lake bluff at the Cleveland Heights-Cleveland border, travels through a steep-banked riparian corridor, and empties into Lake Erie at Gordon Park. Most of the Doan Brook riparian corridor is preserved today as linear open space.

A second stream, called Guldings Brook or Giddings Run on various early maps of the area, once flowed through the western portion of the St. Clair-Superior

neighborhood. This stream began west of Doan Brook and ran quite parallel to it, emptying into Lake Erie around present-day East 55th Street. The *Cuyahoga County Atlas* of 1874 shows the stream above ground. A map of the General Parks System of the City of Cleveland completed in 1918 that showed the other streams of Cleveland's east side does not show Guldings Brook or Giddings Run. What happened to Giddings Run? What circumstances shaped the different fates of these two small streams?

Doan Brook. The headwaters area of Doan Brook was settled in the 1830s by a colony of Shakers who dammed the brook for early milling, creating two lakes that formed the heart of the community until its demise. By the 1920s, the lakes were featured in the planned community of Shaker Heights, designed and built by Cleveland's Van Sweringen brothers. Today the lakes include a marsh area that is home to a wide variety of bird and animal life and serves as an educational and natural resource for Cleveland's eastside communities. The area surrounding the lakes is protected by the Nature Center at Shaker Lakes.

Down the riparian corridor toward Lake Erie, Doan Brook was a source of shale and limestone for building in the early days of the city. The shale was used in the early buildings in the area, including the homes of Cleveland's industrial capitalists who built their mansions on Euclid Avenue, just south of the St. Clair-Superior neighborhood area. A prominent citizen donated land in this area to the City of Cleveland Heights, which created Ambler Park.

In 1882, another prominent citizen, Jeptha Wade, transferred title to 64 wooded acres downstream from Ambler Park under the condition that the City of Cleveland create a park and expend at least \$75,000 for improvements. The City added additional acres and opened Wade Park in 1892. In November 1891, the City of Cleveland proposed establishment of a boulevard and park system that would connect the wooded ravine of Doan Brook Valley to Wade Park (Avery, 1918). In 1894, the City purchased a large portion of the Doan Brook Valley. Subsequent donation of land in 1896 by another prominent Cleveland citizen, John D. Rockefeller, completed the park system almost to Lake Erie.⁵

The last section of the riparian corridor park was completed by William J. Gordon, a Cleveland commercial and industrial business owner whose enterprises included a wholesale grocery business and controlling interest in the Cleveland Iron Mining Company. Gordon lived on a 122-acre estate on Lake Erie that encompassed the mouth of the Doan Brook Valley. The estate stretched along Lake Erie from present-day East 71st Street to East 138th Street (Orth, 1910), the northeast

corner of the St. Clair–Superior neighborhood. The grounds included a beach, private marina, and natural caves and were “in attractiveness and completeness of artistic finish . . . [with] few equals in the country” (Kennedy, 1896, p. 417).

Gordon died in 1892. His will stipulated that the estate should be turned over to the City and be used as a public park, under condition that “the shore on the lake front should be protected from encroachments; that the drives and ponds should be maintained; that no fence should obstruct the land view and that the city should preserve the burial lot of the Gordons” (Avery, 1918, p. 481). In 1894, the City of Cleveland purchased 30 additional acres of the Gordon Estate and added this to the original bequest. In 1901, wading pools for children were made in the brook, and a large bathhouse and pavilion were erected. Flower gardens and conservatories were embellished, tennis courts added in 1915, and the shallow parts of Doan Brook near the Lake Erie outlet were dredged to make a harbor for motor boats. The addition of the Gordon Estate lands completed the public protection of virtually the entire Doan Brook Valley from Shaker Lakes to Lake Erie (Van Tassel & Grabowski, 1987).

Giddings Run. The story of Giddings Run (or Guldings Brook) is tied to public infrastructure—the neighborhood’s streets and sewers. When the territory was annexed to the City of Cleveland in 1873, farming was the predominant economic activity and land use in the area, and the population was low and dispersed. Three streets spurred the city’s development eastward: East 55th Street, St. Clair Avenue, and Superior Avenue. East 55th Street (originally named Willson Blvd.) bisects the neighborhood north-south. In 1865, Superior Avenue was extended eastward toward the rapidly developing eastern edge of the city. St. Clair Avenue (see Figure 2), named in 1885 after General Arthur St. Clair, the first governor of the Northwest Territory, was an important route from the City of Cleveland out to the homes and farms located along the lake (City of Cleveland, 1874; Rose, 1950).

As the eastern side of Cleveland changed from farmland to urban neighborhoods, sewage became an increasing problem. Sewage from the St. Clair–Superior neighborhood was originally discharged without treatment into Lake Erie, Doan Brook, or Giddings Run (Rose, 1950). In 1865, a 3,365-foot interceptor sewer was built along St. Clair Avenue to centralize smaller sewer runoffs and discharge their contents into the Cuyahoga River. When the neighborhood was annexed into the City, the sewers in the area were primitive and not deep enough for house drainage (City of Cleveland, 1874). Improvements began in 1875. A large main sewer line was constructed along East 55th Street, and each home in

the area was connected to this sewer (City of Cleveland, 1875).

The change to Giddings Run from the infrastructure development was dramatic. In 1872, most of Giddings Run was above ground, traversed by only four bridges on the major east-west streets. The stream was culverted in several stages during the road building and sewer building of the late 19th century, diverted first through a series of wood and stone channels, then covered over between 1890 and 1903 (B. Yingling, personal communication, September 23, 1999). A 1903 USGS topographic map shows all but a few segments of the stream as underground. The upper portion of Giddings Run was diverted eastward toward Spring Brook, a branch of Doan Brook that flowed between Doan and Giddings.⁶ Giddings Run did not benefit from the generosity of citizens as did Doan Brook. Without wealthy benefactors to conserve its riparian corridor, Giddings Run was increasingly used as a sewer, until in time, it was made one by the City engineers.

The Lake Erie Shoreline. The lake, its plain, and its bluffs are the reason the neighborhood developed as it did. The geological conditions in the neighborhood were shaped by the continental ice sheet that covered Ohio in the last Ice Age, which carried and distributed materials and smoothed off irregularities in the topography (Orth, 1910, p. 17). Cleveland, established in the late 18th century where the Cuyahoga River empties into Lake Erie, lay between the great sources of iron ore in the western Great Lakes Basin and the coal mines of Pennsylvania (Orth 1910, p. 19). The flat lakefront plain proved an ideal location for the intercity railways that were built to carry the ore and coal. These rail lines had a profound effect on the economic and physical development of the city and spurred growth of the St. Clair–Superior neighborhood. The railroad provided an easy and inexpensive way to receive materials and ship finished goods, and several large manufacturing companies located or expanded operations in the neighborhood (Rose, 1950; Sanborn, 1924), which soon became the second largest industrial concentration in Cleveland (Campbell & Miggin, 1988, p. 46).

The success of the early railroad lines and industrial development stimulated infill of the lakeshore. Beginning in 1894, piers and docks were built along the neighborhood’s shoreline, and refuse piles from the large factories grew on the lakeshore. By 1910, the Army Corps of Engineers had overseen construction of several break walls to protect the lakefront warehouses, factories, and docks. During the 1920s and 1930s, further filling at the lakeshore with the city’s garbage and industrial waste occurred. The combination of railroads, factories, and

dumping cut off neighborhood residents from the lakefront, which was now unattractive for recreational use (see Figure 2).

Beginning in the 1930s, a series of lakefront roads, stretching from downtown through the neighborhood, were built on top of the municipal and industrial refuse piles (Bordner, 1954). In the early 1950s, a limited-access highway was built along the lakefront on top of the original road, and two interchanges were constructed between the old lake bluff and the lake ("Gordon Park Freeway Strip," 1953). One local newspaper noted that "from the improvement has come a striking new look for old Gordon Park, a look so new as to make it scarcely recognizable as the once-favorite recreation grounds of an earlier generation" ("Gordon Park Freeway Strip," 1953, n. p.). Construction of Interstate Highway 90 over its top completed the transformation of the initial two-lane lakeside road to its present-day form of a modern, limited-access highway.

The highways completed the separation of the neighborhood from the lake. Despite the stipulation in Gordon's will that his estate should remain open to Cleveland's residents and the view of the lake unobstructed, Gordon Park was bisected by completion of the interstate highway. Today the park provides the land for the highway interchange at Rockefeller Park and for a small public marina on Lake Erie. None of the improvements at the lake from the 19th and early 20th centuries remain.

Planning Application

How is the neighborhood using the information gathered during the environmental history? The history provided information that demonstrated the interdependent nature of urban life and ecosystem components. It also helped inform the client organizations and residents about the economic changes and public decision making that structured the development of the neighborhood's form and about their subsequent effect on the environment. The history led to a discussion of the complementary purposes of SCSNDC and LADCO—to create a *sustainable neighborhood*, including jobs for neighborhood residents, improved ambient environmental quality, and better health of the residents.

The SCSNDC board and staff have initiated a waterfront-oriented neighborhood planning effort. Its purpose is to "reclaim" the neighborhood's psychological and physical connection to the lake. Today, the shoreline and the adjacent lakeside area consist of industrial facilities, an electricity generation plant, and two public marinas, bordered on the south by the Interstate 90. Safe pedestrian access to the lake is virtually nonexistent, and

access by automobile can occur only in a few places. Most residents rarely associate their neighborhood with Lake Erie. This irony is not lost on some, who recall a time when the neighborhood was known in the city as "the neighborhood by the lake" (K. Jaksic, personal communication, September 1996).

At the lakeside area, *sustainability* means increasing industrial activity while improving air quality that is degraded by emissions. Much of the lakeside industrial area today is vacant or underused. LADCO is seeking to upgrade the pollution prevention technologies in the facilities and to attract less environmentally polluting industries to the facilities. The organization is also seeking to move numerous small facilities that are located directly among the neighborhood's houses in the western part of the neighborhood to vacant facilities in the lakeside area. This change would remove the emissions from close proximity to houses. It would also result in fewer air emissions overall, as these small facilities tend to be very old and not regulated by environmental laws that would apply to the larger, retooled industrial facilities the organization envisions near the lake.

Several SCSNDC board members and residents, including one who is executive director of LADCO, have become involved in efforts to develop a watershed plan for Doan Brook. Water quality in the brook is compromised by several combined sewer overflows (CSOs), which also cause excessive flooding. They also seek to restore the condition of Rockefeller Park and to create better pedestrian access into the park from the eastern end of the neighborhood and to the lake at Gordon Park.

Our documentation of the different histories of Giddings Run and Doan Brook has led to discussions about the lack of greenspace in the western part of the neighborhood. The development organizations hope to create neighborhood greenspace on land vacated by small industrial facilities and to find a land corridor through the industrial area to the lakeshore.

Observations and Conclusions

The goals for infusing urban environmental history into neighborhood planning were to improve the information base for planning, use ecological resources to create a stronger sense of place, and stimulate new ideas for the neighborhood's future. Although the environmental history proved useful for the neighborhood clients, several interrelated issues and questions arose during its completion: scale, time frame, perspective, the scope of work, data issues, and the end product. These should be kept in mind by anyone engaged in this kind of project.

Scale

How does a smaller scale for planning affect the relevance and usefulness of urban environmental history? Geographically, the neighborhood scale is smaller than the citywide scale used for much urban environmental history and much smaller than the ecological or regional scale more typically used for environmental history. The urban setting often decreases residents' awareness of ecosystem function because it radically alters natural ecosystems and replaces them with human-engineered systems. One purpose of the neighborhood environmental history we prepared was to reconnect neighborhood residents with broader ecosystem function so that they understood the relationship of their place to that larger ecosystem.

To that end, we began by seeking information about northeast Ohio's natural history, which was the context for a deeper understanding of changing hydrology and land forms in the neighborhood. Our work took an integrative approach that began with the traditional attributes of natural history (geology, soils, hydrology, vegetation, and wildlife) and built upward, adding economic and cultural attributes. Environmental history at the neighborhood scale should allow residents or clients to understand the relationship between ecologically defined and culturally defined spaces as these spaces changed together. Rather than merely telling the story of broad biogeophysical changes, however, a neighborhood environmental history has to focus on the scale that is most relevant to planning and to people—the story of how the neighborhood's ecological conditions affected and were changed by residents as they built and rebuilt their settlement.

Time Frame

Regarding the appropriate time frame for the history, our hope was to present information about how the physical place shaped the settlement and was in turn changed by the settlement. We thus began our work prior to human presence in the area by documenting the geological processes that formed the Great Lakes. This geological history revealed that successive ice shields created several ancient lake ridges which served first as the locations of footpaths for the area's Native American residents and subsequently became the location for important commercial streets as the neighborhood was built out in the late 19th century. The commercial form, in turn, tended to hide the differences in elevation along these ridges.

Perspective

As with any effort to tell a story about a particular place and time, the question of "whose history" inheres in our example. Urban neighborhoods can change dramatically

over time, not only in their ecological systems and natural landscape, but in their inhabitants as well. In many neighborhoods the residents of today share little else but the physical space with residents from the past. Each successive generation or group of residents in the neighborhood uses a set of natural resources and physical characteristics to create its own cultural landscape. That process is common over time, even if the particular resources or cultural values that guided their use are not. This aspect of neighborhood changes is increasingly relevant, as the aging Slavic residents who have firsthand knowledge of the neighborhood's past are replaced by younger African American, Asian, and Hispanic residents who may have different concerns and no knowledge of the neighborhood's history. The client hopes to use the natural history as a starting point for building a shared social history.

Scope of Work, Data, and Product

Finally, the scope of work, the relevant data, and the product generated needed to be identified. For whom is the environmental history carried out? What is its purpose? In a purely research setting, a comprehensive environmental history would be ideal. Often, however, planning practice limits the time and resources that can be devoted to information gathering. Thus a careful examination of the kind of information needed from the environmental history is required. Our experience also raised questions about data availability. Collection of the data on natural, social, and infrastructure development of a neighborhood depends on locally available materials. In smaller cities such resources might not exist or might not be accessible to the general public for review.⁷

Communicating the results is also subject to constraints. Our client was interested in resource materials that could be used for their ongoing neighborhood organizing around environmental issues. The early work for the environmental history was followed by a more comprehensive inventory of current neighborhood conditions, which in turn, required additional historical research. The history was included in a large binder and eventually posted as a Web page (see Note 1). We also developed a series of fact sheets from the resource guide that have been used to inform residents about environmental conditions in the neighborhood. Residents eventually participated in several projects to document the environmental history of vacant lots in the neighborhood. The client has built a cadre of residents, block club leaders, and church leaders who now are engaged in a full range of projects to address environmental conditions in the neighborhood. A great deal of the stimulus for their efforts began with the environmental history and its outcomes.

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NOTES

1. The discussions between the client and the university team also identified the most appropriate mechanisms for communicating the results of the history to the neighborhood and the products that would be most useful for the client. The environmental history eventually became part of a comprehensive neighborhood environmental resource guide that was completed by an undergraduate environmental studies and planning studio. A Web-based version of this guide, including a full environmental history of the neighborhood, can be found at URL: <<http://urban.csuohio.edu/~wendy/Stclair.htm>>.
2. The neighborhood is host to nearly 20 facilities that report to the Toxic Release Inventory.
3. According to the 1990 census, the population was 12,000, with 56% African American, 36% White, and 7% Hispanic (U.S. Census Bureau, 1990). Figures from the 2000 census are for respondents who identified themselves as one race only.
4. Data on hydrology, physiography, and lake geology were retrieved from the USGS, the Cuyahoga County Soil and Water Conservation District, and the Cleveland Museum of Natural History. Much information on the evolution of the built form was found in *A History of Cleveland and Its Environs, the Heart of New Connecticut* (Avery, 1918), one of several excellent histories of Cleveland completed in the late 19th and early 20th centuries. More focused information on the neighborhood's sewer, water, and street systems were derived from Hopkins series plat maps (G. M. Hopkins Company, 1912–1914) and reports from the City of Cleveland's Public Works division. Data on the railroads and the highway system in the neighborhood was retrieved from the archives of two local newspapers and the histories. Information on changing land uses was derived from examination of approximately 50 years of maps from the Sanborn Fire Insurance Company (1874–1924). Information on the preservation and loss of surface streams in the neighborhood was derived from the Hopkins (1915) maps, newspaper archives, and the secondary history sources. We also interviewed several long-time residents involved in neighborhood block clubs and the local parish to gather information on their perception of the neighborhood's ambient environmental conditions and their memory of access to the lake.
5. Today Rockefeller Park extends along the lower reach of Doan Brook, encompassing the brook's riparian corridor and floodway, which is framed by steep ravine walls along

most of the brook. The park's amenities include woods, meadows, ponds, formal landscaping, cultural gardens, several playgrounds, and tennis courts. Nearly the entire Doan Brook riparian corridor is preserved as park land. A large section is currently culverted under University Circle, home to Cleveland's symphony hall and two large hospital complexes. However, recent planning proposes to "day-light" the stream and surround it with public greenspace.

6. In 1998, engineering studies for a stormwater improvement project to address combined sewer overflows and flooding in the Doan Brook riparian corridor confirmed that the rerouted Giddings Run is a major source of flooding.
7. The role of the university in data collection can be critical in a project such as ours, both for access to library archives and for the person power needed. Combing old historical materials is time consuming and not always an exciting activity. It is doubtful that many community-based organizations will have the staff time to complete such an effort. University-based classes and research such as ours can provide the time so critical to find the appropriate level of detail needed to research and to write the neighborhood environmental history.

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APPENDIX

TABLE A-1. Rosen and Tarr's dimensions of urban environmental history and examples of topics in the literature.

Topics	Literature examples
Impact of cities on the natural environment	
Resource extraction	Mumford (1938; 1956)—description of the impact of the settlement on its surrounding countryside
Modification of topography/hydrology	Spirn (1984)—Boston hill systematically cut down to fill in the Back Bay area
Vegetation/habitat destruction	Walton (1992)—changes to waterfront in Olympia, Washington
Waste generation	Cronon (1991)—forest extraction for lumber industry in Chicago
Species extinction/exotic introduction	Jackson (1997)—impact of canals on hydrologic regimes in Ontario, Canada
Microclimate change	McGucken (2000)—description of impacts of industrialized city on water quality of Lake Erie
Impact of the natural environment on cities	
Location for transport	Mumford (1938; 1956)—description of the dependence of the settlement on its surrounding countryside
Resource availability	Reps (1981)—location and physical layout of the colonial and frontier American city influenced by physical features of land and water.
Natural hazards	Cronon (1991)—Chicago's dependence on hinterland Porter (1998)—Thames River embankment for flood and disease control Gumprecht (1999)—importance of Los Angeles river for settlement development
Human response to urban environmental change and environmental problems	
Change in human geography	Hurley (1994); Glick (1980); Melosi (1995)—some groups move away from the pollutants generated, changed laws to mitigate pollution through infrastructure development or environmental regulation
Change in law/regulation	Glick (1980)—public response to noxious odors
Value systems concerning natural world	Hamlin (1994)—articulation of sewage irrigation as a public policy problem in Edinburgh, 1840
Value system concerning human manipulation of natural world	Hurley (1994)—generation of public response to surface water degradation from oil industry in NYC
Value system concerning distributional equity of environmental hazards	Melosi (1994)—regulation of sanitary services in Houston Melosi (1995)—shift in focus of environmental movement to issues in work and production Greenberg (1990)—social definition of energy as power for work supported industrialization Hurley (1997)—racial group differences result in different response to urban pollution Flanagan (1996)—gender differences in social movement to preserve Chicago's lakefront Tarr (1996)—attitudes about water and land create city as ultimate sink for pollution Stradling (1999)—group basis for different approaches to urban air pollution Ogle (1999)—culture of privatization delayed installation of water and sewers in 19th century America.
Urban perspective and the built environment	
Infrastructure	Colten (1994)—creation of urban land through refuse disposal in Chicago
Building materials	Rome (1994)—environmental history of residential development, 1870–1990
Transportation technology	Hough (1990)—evolution of regional landscape through use of indigenous building materials
Land creation	Reps (1981)—location and physical layout of the colonial and frontier American city influenced by physical features of land and water. Melosi (1994)—development of sanitary services in Houston Jackson (1997)—impact of canals on urban development in Ontario, Canada Hamlin (1997)—development of urban sanitary infrastructure and public health reform Elkind (1998)—different response to provision of public water supply based on local resource constraints Melosi (2000)—history of development and consequences of urban water, sewer, and solid waste infrastructure

TABLE A-2. Suggested attributes, data, data sources, and data repositories for neighborhood environmental histories.

Attributes	Data	Data sources	Data repository/provider
Natural history			
Geology	Prehistoric subsurface and surface features and materials	Geological surveys	USGS Survey (regional office or Web page), local university geology dept.
Soils	Distribution and classification of soils	Soils classification maps and descriptions	County soil and water conservation district (office or Web page), local university geology dept.
Physiography	Shoreline and land surface formations	Topographic maps, highway engineering studies	Regional Coast Guard office, natural history museum, local university geology dept., state or county engineer
Hydrology	Distribution of surface/ground water	Topographic maps, highway engineering studies	County planning commission, county and state engineer's office
Land cover/vegetation	Prehistoric/historic land cover, including vegetation patterns and species	Soil core samples, settler journals, local histories, land contracts	Public library reference resources, local and regional natural history museum, local/regional history society, regional park system, local university biology dept.
Wildlife	Prehistoric/historic fauna species	Fossil record, settler journals, local histories	Public library reference resources, local and regional natural history museum, local/regional history society, regional park system, local university biology dept.
Climate	Prehistoric and present day climate and weather conditions	Fossil record, local and national weather records	Local university geology dept., National Weather Service
The built form			
City streets & highways	Historic and current streets, road and highway development	Atlases and maps, newspaper articles, city and county capital improvement plans and budget reports, record of public meetings	City street dept. office, municipal and county engineer offices, public library reference section, local newspaper archives, local university press and photograph collections, city and county records and planning depts., city council archives, county commission archives, public library, local university archives, historical society
Drinking water supply	Historic development of drinking water system and treatment plant installation	Atlases and maps, newspaper articles, city and county capital improvement plans and budget reports, record of public meetings	City water dept. office, private water company offices, municipal and county engineer offices, public library reference section, local newspaper archives, local university press and photograph collections, city and county records and planning depts., city council archives, county commission archives, public library, local university archives, historical society
Sewerage	Historic development of sewer system and treatment plant installation	Atlases and maps, newspaper articles, city and county capital improvement plans and budget reports, record of public meetings	Local/regional sewer district office, municipal and county engineer offices, public library reference section, local newspaper archives, local university press and photograph collections, city and county records and planning depts., city council archives, county commission archives, public library, local university archives, historical society

TABLE A-2. (continued)

Attributes	Data	Data sources	Data repository/provider
Trolleys and trains	Historic development of mass transit installation and location	Atlases and maps, newspaper articles, city and county capital improvement plans and budget reports, record of public meetings	City or regional transit authority office, municipal and county engineer offices, public library reference section, local newspaper archives, local university press and photograph collections, city and county records and planning depts., city council archives, county commission archives, public library, local university archives, historical society
Land use	Historic change and current land use, including vacant land, landfills and brownfields	Historic and current land use maps and planning documents	City and county planning dept., public library, solid waste district
Shoreline and river changes	Location of dredged and filled land and break walls	Port authority plans and operations records, state and federal agency records of decision on permits	Port authority office, district office of Army Corps of Engineers, state and federal environmental protection agency offices
Pollution	Historic pollution emissions and levels, contaminated land sites	City, state and federal public health records; emissions data and permits; CERCLA and RCRA permits	City and county public health bureaus; state and federal environmental protection agency offices and Web pages
Socioeconomic change and institutions			
Zoning	Historic/current zoning record	Historic and current zoning maps	City government planning dept., county planning commission
Land ownership	Property title	Maps and database of historic and current ownership Sanborn Fire Insurance maps	City or county assessor's office City or county library, historical society
Neighborhood residents	Demographic change/current status	U.S. Census data	U.S. Census repository (public library, local university data center), Dept. of Commerce (U.S. Census Bureau Web site)
	Perceptions of residents on environmental issues and change	Interviews with neighborhood leaders, family histories	Local public library, church records, field research
	Neighborhood architectural styles	Newspaper, photograph and map collections, secondary histories of city	Local or university library, historical society
Governmental and social institutions	Location/history of public, private and religious schools	School dept. building records, capital budgets	Local public school district, library secondary sources, newspaper archives, Catholic diocese and other religious organizations
	Location/history of religious institutions	Organizational records, local histories, historic zoning maps	Catholic diocese and other religious organizations, public library
	Location/history of parks and recreation facilities	Park plans, zoning maps	City recreation department, regional park system administration
	Location/history of social clubs	Club meetings records; directories	Public library, current club archives
Businesses	Types of business in neighborhood	Historic business directories and yellow pages	Local university library, public library